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EXAMINER	
DICUS, TAMRA	
ART UNIT	PAPER NUMBER
1774	

DATE MAILED: 09/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/712,173	KIM ET AL.	
	Examiner	Art Unit	
	Tamra L. Dicus	1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) *14,15 and 25-34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 16-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11-13-04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The IDS is acknowledged.

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-13, 16-24 are drawn to an energetic beam markable article, classified in class 428, subclass 195.1.

   II. Claims 14-15, drawn to an injection molded part, classified in class 264,subclass 109.

   III. Claims 25-34 drawn to a method of making an energetic beam markable article, classified in class 427, subclass 100.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the article of I can be made by coating a substrate with phase material prior to dispersing coalescable material and/or coating a plurality of cores having a second color prior to coating a plurality of cores with a first color.

3. Inventions of Groups I and II are independent inventions, one not requiring the particulars of the other, injection molded is not required in I.

4. Inventions of Groups II and III are independent inventions, one not requiring the particulars of the other, injection molded is not required in III.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. During a telephone conversation with Sylvia Chen on 09-12-05 a provisional election was made with traverse to prosecute the invention of I, claims 1-13 and 16-24. Affirmation of this election must be made by applicant in replying to this Office action. Claims 14-15, and 25-34 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claim 11 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which

it is most nearly connected, to make and/or use the invention. The Examiner believes that claim 11 does not have the proper support in the original specification as filed because the specification does not provide any teaching or discussion on how capsules that encapsulate a quantity of solvent, emulsifier, monomer, or initiator. Thus one having ordinary skill in the art would not know how to make the instant invention. See page 8, line 4-8 of Applicant's instant specification.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1-2 and 4-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Claim 1 recites the limitation "the average dispersed body size" in lines 11-12. There is insufficient antecedent basis for this limitation in the claim.

13. Claims 4-6 are rejected because the substrate is made of a thermoelastic film selected from polycarbonate among others, however, a "thermoelastic" film is not found and it is unclear as to what is encompassed by the claims as polycarbonate is not a thermoelastic polymer. See Applicant's page 4, lines 6-7 referring to a thermoplastic film of polycarbonate. Thus, the Examiner interprets this film to be "thermoplastic" as described in the specification.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claims 1 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 6,231,196 to Mahachek.

Mahachek teaches a laser marking mirror of a transparent plastic body (substrate) and a reflective backing (col. 9, lines 20-23) where two different colored areas blue and green layer are irradiated with a laser on the mirror (col. 9, lines 5-10). The mirror is irritated with a Nd:YAG laser using any plastic such as polyvinyl acetate and polycarbonate (col. 6, lines 20-55 and col. 9, lines 15-22). Because the same materials and same energy beam marking is performed with a laser, the polymers are deemed "thermally coalescable" and are "coalesced into bodies characterized by an average dimension that substantially exceeds the average dispersed body size" (see Applicant's page, 4, lines 11-22, page 7, lines 4-5, page 8, lines 7-8 and page 9, lines 21-23). Further that material is able to or capable of coalescing or polymerizing, is intended use and is not germane since it has been held that an element that is "being able to" perform a function is not a positive limitation but only requires the ability to so perform. *In re Hutchinson*, 69 USPQ 138. Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. Claims 1 and 13 are met.

16. Claims 1-3, 7-13 and 19-24 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 6,094,273 to Asher et al.

Asher teaches a crystalline colloidal arrays (CCA) made of PC (col. 7, lines 2-11) comprising styrene particles dispersed in a hydrogel matrix (continuous phase as described in Applicant's specification), a quantity of solvent (surfactant such as sodium-di(1,3-dimethylbutyl)sulfosuccinate or water containing N-isopropylacrylamide (instant claim 21)), emulsifier in the form of micelles (emulsion polymer electrically charged monodisperse particles) and a quantity of polymerization initiator (crosslinking agent, free-radical initiator to initiate polymerization or UV photoinitiator) dispersed in the solvent, and the thermally coalescable material comprising a monomer (mixing the desired monomer with a crosslinking agent) (col. 9, lines 24-31) (instant claim 20) dispersed in the solvent (such compositions are commercially available) to create a film (col. 8, lines 15-45, col. 9, lines 20-33) and applies a laser beam to write a pattern in the CCA (embraces a plurality of areas as per instant claims 1, 19, and 23-34) to create a mutli-colored display including computer display devices (col. 11, lines 18-45). See also col. 3, lines 25-50, col. 8, lines 20-68, and Figure 2. See Figure 2 showing multiple areas between the particles. Asher also teaches the polymeric layer that contains polymeric particles of polycarbonate is adhered to a metal indium substrate layer (first substrate) (col. 10, lines 60-68) (instant claim 22). Claims 1-3, 7-13, and 19-24 are met. To claim 2, the particles are between 50-500 nm, (col. 9, lines 30-32 and col. 11, lines 49-50), thus meeting Applicant's rang of less than 400 nm. Further, because the same materials and same energy beam marking is performed with a laser, the polymers are deemed "thermally coalescable" and are "coalesced into bodies characterized by an average dimension that substantially exceeds the average dispersed body size" (see Applicant's page, 4, lines 11-22, page 7, lines 4-5, page 8, lines 7-8 and page 9, lines 21-23). Further that material is able to or capable of coalescing or

polymerizing, is intended use and is not germane since it has been held that an element that is "being able to" perform a function is not a positive limitation but only requires the ability to so perform. *In re Hutchinson*, 69 USPQ 138. Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation.

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

18. Claims 1, 7, and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by USPN 6,627,299 to Feng et al.

Feng teaches any thermoplastic resin particles including polymethacrylates, polyvinyl acetals, polycarbonates, polyethylene vinyl acetate, polyethylene, and polybutylene terephthalate and copolymers and mixtures thereof (col. 8, lines 9-30) make up a laser mark designed article. The resins include pigments or mica having a particle size of less than 15 microns to produce multi-colored laser images (col. 7, lines 10-68). The particle mixture is irradiated with a laser at two or more portions (one or more first and second areas) having different color tones on a plastic substrate. See also col. 4, lines 30-45, col. 5, lines 15-68, col. 8, lines 30-66 and col. 10, lines 1-10. Feng teaches that a chemical change happens when the particles are irradiated (col. 3, lines 30-35 and col. 6, lines 20-55), such as foaming. Because the same materials and same energy beam marking is performed with a laser, the polymers are deemed "thermally

coalescable" and are "coalesced into bodies characterized by an average dimension that substantially exceeds the average dispersed body size" (see Applicant's page, 4, lines 11-22, page 7, lines 4-5, page 8, lines 7-8 and page 9, lines 21-23). Further that material is able to or capable of coalescing or polymerizing, is intended use and is not germane since it has been held that an element that is "being able to" perform a function is not a positive limitation but only requires the ability to so perform. *In re Hutchinson*, 69 USPQ 138. Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. Claims 1 and 13 are met. Regarding claim 7, the composition comprises particles comprising a polymer (col. 5, lines 20-21).

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

20. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,627,299 to Feng et al.

21. Feng essentially teaches the claimed invention.

Regarding claim 2, Feng does not expressly state the average dispersed body size is less than 400 nanometers however, Feng teaches the resin material is irradiated with a laser beam and foams, thus decreasing in size, therefore, it would have been obvious to one having ordinary skill

in the art to have a body size less than 400 nm because the same material and process is used. Further it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272. The size effects the coverage area. See col. 4, lines 30-45, col. 5, lines 15-68, col. 8, lines 30-66 and col. 10, lines 1-10.

22. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,231,196 to Mahachek.

23. Mahachek essentially teaches the claimed invention.

Regarding claim 2, Mahachek does not expressly state the average dispersed body size is less than 400 nanometers however, Mahachek teaches the resin material is irradiated with a laser beam, therefore, it would have been obvious to one having ordinary skill in the art to have a body size less than 400 nm because the same material and process is used. Further it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272. The size effects the coverage area. See col. 9.

Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,094,273 to Asher et al. in view of USPN 6,652,983 to Mori.

Asher essentially teaches the claimed invention as applied to claim 1 above.

Asher does not expressly teach a first and second substrate comprising a thermoplastic film of polycarbonate.

As aforementioned, Asher teaches the polymeric layer that contains polymeric particles of polycarbonate among other ingredients in a film and used for optical articles or adhered to a metal indium substrate layer.

Mori teaches an in mold decorative sheet comprising a patterned base of polycarbonate (52, FIG. 16 and associated text) between thermoplastic layers (64, 54, FIG. 16 and associated text), and metallic indium sheet (53, FIG. 16 and associated text) supported on first thermoplastic (54, FIG. 16 and associated text). 64 is of PMMA or acrylic. 53 is of a metal thin film that may further be surrounded on either side of thermoplastic films including vinyl resin, acrylic resin, or urethane. 54 is of acrylic, polystyrene, or EVA (also meeting thermoplastic films). See also col. 29-col. 31, line 40.

It would have been obvious to have modified the plastic article Asher to include a first and second thermoplastic films because Mori teaches the construction provides high wear resistance used in mold decorative sheets (Abstract, FIG. 16 and associated text, and col. 29-col. 30, line 40 of Mori).

Claims 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,231,196 to Mahachek in view of USPN 6,543,163 to Ginsberg.

Mahachek essentially teaches the claimed invention.

Regarding claim 3, Mahachek does not teach a second substrate covering the first layer to sandwich the laser markings with the first substrate, but does teach a first substrate is transparent (col. 8, lines 15-20) when the plastic article is a mirror.

Ginsberg teaches a mirror display where laser etched graphic patterns are covered by a plastic housing or a clear coat to further enhance the transparency of the image having a transparent base (Abstract, Fig. 4 and 6A, col. 1, lines 40-45, and col. 3, lines 35-45).

It would have been obvious to one having ordinary skill in the art to have modified the article of Mahachek to introduce a second substrate to cover the laser markings because Ginsberg teaches the laser images are sandwiched between two substrates in order to further enhance the transparency of the image having a transparent base (Abstract, Fig. 4 and 6A, and col. 3, lines 35-45).

Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,231,196 to Mahachek in view of USPN 6,543,163 to Ginsberg and further in view of USPN 6,475,420 to Numrich et al.

Mahachek essentially teaches the claimed invention as per claim 1.

Regarding claims 3-6, Mahachek does not expressly teach the plastic substrate comprises a thermoplastic film, but teaches PC and PMMA resins used in the article (col. 6, lines 20-50).

However, Numrich teaches molded plastic parts including polycarbonate (PC) and polymethylmethacrylate (PMMA) (col. 1, lines 5-68-col. 2, lines 35 and Example 5) are shaped and further form thermoplastic and elastomer modified or using elastic lacquers PMMA (thermoelastic equivalency if desired) films as laminates via injection molding to increase stiffness.

Thus, it would have been obvious to have modified the plastic article of Mahachek to include a thermoplastic film of polycarbonate because Numrich teaches thermoplastic PC and PMMA are shaped with thermoplastic and thermoelastic films as laminates via injection molding

to increase stiffness in molded decorative articles (col. 1, lines 5-68-col. 2, lines 35, col. 6, lines 55-68, and Example 5 of Numrich).

Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,627,299 to Feng et al. in view of USPN 6,475,420 to Numrich et al.

Feng essentially teaches the claimed invention as per claim 1.

Regarding claims 5-6, Feng does not expressly teach the substrate comprises a thermoplastic film *per se*, but teaches the plastic articles include plastic articles that are formed by extrusion or molded.

Further Numrich teaches molded plastic parts including polycarbonate (PC) and polymethylmethacrylate (PMMA) (col. 1, lines 5-68-col. 2, lines 35 and Example 5) are shaped and further form thermoplastic and elastomer modified or using elastic lacquers PMMA (thermoelastic equivalency if desired) films as laminates via injection molding to increase stiffness.

Thus, it would have been obvious to have modified the plastic article of Feng to include a thermoplastic film of polycarbonate because Feng suggests forming plastic articles via molding including PC and PMMA (col. 4, lines 30-35 of Feng) and Numrich teaches thermoplastic PC and PMMA are shaped with thermoplastic and thermoelastic films as laminates via injection molding to increase stiffness in molded decorative articles (col. 1, lines 5-68-col. 2, lines 35, col. 6, lines 55-68, and Example 5 of Numrich).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,627,299 to Feng et al. in view of USPN 5,840,791 to Magerstedt et al.

Regarding claim 8, Feng does not teach the material comprises polymeric particles of PMMA, polyvinyl acetate (PVA), or styrene-butadiene acrylonitrile copolymers (ABS).

However, Magerstedt teaches plastic molded articles including PC, PMMA, and ABS graft polymers in particle form (Abstract, Examples, Results Table, col. 1, lines 1-15, col. 2, lines 1-30 and col. 5, lines 1-55) as a helpful component in laser markable compositions and imaged products.

Thus it would have been obvious to one having ordinary skill in the art to have modified the plastic article of Feng to comprise particles of PMMA or ABS because Magerstedt teaches PMMA, PC, and ABS copolymers aid in laser markable compositions colored and imaged products (Abstract, Examples, Results Table, col. 1, lines 1-15, col. 2, lines 1-30 and col. 5, lines 1-55).

Claim 8 is rejected under 35 U.S.C. 102(b) as being anticipated by USPN 6,231,196 to Mahachek in view of USPN 5,840,791 to Magerstedt et al.

Regarding claim 8, Mahachek does not teach the material comprises polymeric particles of PMMA, polyvinyl acetate (PVA), or styrene-butadiene acrylonitrile copolymers (ABS).

However, Magerstedt teaches plastic molded articles including PC, PMMA, and ABS graft polymers in particle form (Abstract, Examples, Results Table, col. 1, lines 1-15, col. 2, lines 1-30 and col. 5, lines 1-55) as a helpful component in laser markable compositions and imaged products.

Thus it would have been obvious to one having ordinary skill in the art to have modified the plastic article of Mahachek to comprise particles of PMMA or ABS because Magerstedt teaches PMMA, PC, and ABS copolymers aid in laser markable compositions colored and imaged products (Abstract, Examples, Results Table, col. 1, lines 1-15, col. 2, lines 1-30 and col. 5, lines 1-55).

Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,231,196 to Mahachek in view of USPN 6,094,273 to Asher et al.

Mahachek esssentially teaches the claimed invention as applied to claim 1 above.

Mahachek teaches the PC plastic article can be used in decorative colored plastic substrates such as cell phones or computer articles to color in dark or light colors (col. 9, lines 1-30, col. 10, lines 1-35).

Regarding claim 9, Mahachek does not teach the first layer further comprising a continuous phase where the material is dispersed in said phase.

Asher teaches a crystalline colloidal arrays (CCA) made of PC (col. 7, lines 2-11) comprising styrene particles dispersed in a hydrogel matrix (continuous phase as described in Applicant's specification) to create a film (col. 8, lines 15-45, col. 9, lines 20-33) and applies a laser beam to write a pattern in the CCA (embraces a plurality of areas) to create a mutli-colored display including computer display devices (col. 11, lines 18-45). See also col. 3, lines 25-50 and Figure 2.

It would have been obvious to one having ordinary skill in the art to have modified the plastic article of Mahachek to further comprise a continuous phase where the thermally coalescable material is dispersed in said phase because Asher teaches the same thermally

coalescable material is dispersed in a continuous phase of hydrogel to create multi-colored films or articles used in optical and/or laser beamed articles (Figure 2, col. 3, lines 25-50, col. 7, lines 2-11, col. 8, lines 15-45, col. 9, lines 20-33, col. 11, lines 18-45 of Asher).

Regarding claim 10, Mahachek does not teach a quantity of solvent, emulsifier in the form of micelles and a quantity of polymerization initiator dispersed in the solvent, and the thermally coalescable material comprising a monomer dispersed in the solvent.

Asher teaches a crystalline colloidal arrays (CCA) made of PC (col. 7, lines 2-11) comprising a quantity of solvent (surfactant such as sodium-di(1,3-dimethylbutyl)sulfosuccinate or water), emulsifier in the form of micelles (emulsion polymer electrically charged monodisperse particles) and a quantity of polymerization initiator (crosslinking agent, free-radical initiator to initiate polymerization or UV photoinitiator) dispersed in the solvent, and the thermally coalescable material comprising a monomer (mixing the desired monomer with a crosslinking agent) dispersed in the solvent. Such compositions are commercially available. See col. 8, lines 20-68.

It would have been obvious to have modified the plastic article of Mahachek to further comprise a quantity of solvent, emulsifier in the form of micelles and a quantity of polymerization initiator dispersed in the solvent, and the thermally coalescable material comprising a monomer dispersed in the solvent because Asher teaches such compositions are commercially available to create polymerized CCA films where control of the periodicity of the CCA is desired in optical and/or laser beamed articles (Figure 2, col. 3, lines 25-50, col. 7, lines 2-11, col. 8, lines 15-68, col. 9, lines 20-33, col. 11, lines 18-45 of Asher).

Regarding claim 11, while none of the references refer to encapsulated quantities of said ingredients of claim 10, absent of the showing of the criticality of encapsulation it would have been obvious within the level of ordinary skill in the art to select a suitable encapsulated composition from commercially available particles as taught by Asher (see col. 8, lines 20-68).

Regarding claim 12, Mahachek does not teach a heat reflecting second layer on the first substrate.

Asher teaches the CCA may be self assembled between two quartz plates equipped with metal strips of indium tin oxide to localize heating to diffract light in the area that is heated and a color is observed (col. 10, lines 58-col. 11, line 2).

It would have been obvious to one having ordinary skill in the art to have modified the plastic article of Mahachek to further include a second heat reflecting second layer on the first substrate because Asher teaches the heat reflecting layer on the substrate concentrates heat on the first layer containing areas to color it (col. 10, lines 58-col. 11, line 2 of Asher).

Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,627,299 to Feng et al. in view of USPN 6,094,273 to Asher et al.

Feng essssentially teaches the claimed invention as applied to claim 1 above.

Feng teaches the PC plastic article can be used in decorative colored plastic substrates such as cell phones or computer designs to color in dark or light colors (col. 8, lines 10-45, col. 10, lines 1-15).

Regarding claim 9, Feng does not teach the first layer further comprising a continuous phase where the material is dispersed in said phase.

Asher teaches a crystalline colloidal arrays (CCA) made of PC (col. 7, lines 2-11) comprising styrene particles dispersed in a hydrogel matrix (continuous phase as described in Applicant's specification) to create a film (col. 8, lines 15-45, col. 9, lines 20-33) and applies a laser beam to write a pattern in the CCA (embraces a plurality of areas) to create a mutli-colored display including computer display devices (col. 11, lines 18-45). See also col. 3, lines 25-50 and Figure 2.

It would have been obvious to one having ordinary skill in the art to have modified the plastic article of Feng to further comprise a continuous phase where the thermally coalescable material is dispersed in said phase because Asher teaches the same thermally coalescable material is dispersed in a continuous phase of hydrogel to create multi-colored films or articles used in laser beamed articles (Figure 2, col. 3, lines 25-50, col. 7, lines 2-11, col. 8, lines 15-45, col. 9, lines 20-33, col. 11, lines 18-45 of Asher).

Regarding claim 10, Feng does not teach a quantity of solvent, emulsifier in the form of micelles and a quantity of polymerization initiator dispersed in the solvent, and the thermally coalescable material comprising a monomer dispersed in the solvent.

Asher teaches a crystalline colloidal arrays (CCA) made of PC (col. 7, lines 2-11) comprising a quantity of solvent (surfactant such as sodium-di(1,3-dimethylbutyl)sulfosuccinate or water), emulsifier in the form of micelles (emulsion polymer electrically charged monodisperse particles) and a quantity of polymerization initiator (crosslinking agent, free-radical initiator to initiate polymerization or UV photoinitiator) dispersed in the solvent, and the thermally coalescable material comprising a monomer (mixing the desired monomer with a

crosslinking agent) dispersed in the solvent. Such compositions are commercially available. See col. 8, lines 20-68.

It would have been obvious to have modified the plastic article of Feng to further comprise a quantity of solvent, emulsifier in the form of micelles and a quantity of polymerization initiator dispersed in the solvent, and the thermally coalescable material comprising a monomer dispersed in the solvent because Asher teaches such compositions are commercially available to create polymerized CCA films where control of the periodicity of the CCA is desired in optical and/or laser beamed articles (Figure 2, col. 3, lines 25-50, col. 7, lines 2-11, col. 8, lines 15-68, col. 9, lines 20-33, col. 11, lines 18-45 of Asher).

Regarding claim 11, while none of the references refer to encapsulated quantities of said ingredients of claim 10, absent of the showing of the criticality of encapsulation it would have been obvious within the level of ordinary skill in the art to select a suitable encapsulated composition from commercially available particles as taught by Asher (see col. 8, lines 20-68).

Regarding claim 12, Feng does not teach a heat reflecting second layer on the first substrate.

Asher teaches the CCA may be self assembled between two quartz plates equipped with metal strips of indium tin oxide to localize heating to diffract light in the area that is heated and a color is observed (col. 10, lines 58-col. 11, line 2).

It would have been obvious to one having ordinary skill in the art to have modified the plastic article of Feng to further include a second heat reflecting second layer on the first substrate because Asher teaches the heat reflecting layer on the substrate concentrates heat on the first layer containing areas to color it (col. 10, lines 58-col. 11, line 2 of Asher).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,627,299 to Feng et al. in view of USPN 6,094,273 to Asher et al., as applied to claim 10, and further in view of USPN 5,596051 to Jahns et al.

Feng and Asher are relied upon above for claim 10.

To further address claim 11, while none of the references refer to encapsulated quantities of said ingredients of claim 10, Jahns teaches an emulsified polymerization of monomers including solvents, monomers, and initiators are the way to form microencapsulated capsules containing a core and shell used in applications where when elevated temperature is applied the microcapsules are opened to control the release of the protected core material (Abstract and col. 6, line 65-col. 7, lines 10 of Jahns).

It would have been obvious to one having ordinary skill in the art to have modified the combination to further encapsulate the additives of claim 10 because Jahns teaches emulsified polymerization of monomers including solvents, monomers, and initiators inherently form microencapsulated capsules containing a core and shell used in applications where when elevated temperature is applied the microcapsules are opened to control the release of the protected core material (Abstract and col. 6, line 65-col. 7, lines 10 of Jahns).

24. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,231,196 to Mahachek in view of USPN 6,094,273 to Asher et al., as applied to claim 10, and further in view of USPN 5,596051 to Jahns et al.

Mahachek and Asher are relied upon above for claim 10.

To further address claim 11, while none of the references refer to encapsulated quantities of said ingredients of claim 10, Jahns teaches an emulsified polymerization of monomers

including solvents, monomers, and initiators are the way to form microencapsulated capsules containing a core and shell used in applications where when elevated temperature is applied the microcapsules are opened to control the release of the protected core material (Abstract and col. 6, line 65-col. 7, lines 10 of Jahns).

It would have been obvious to one having ordinary skill in the art to have modified the combination to further encapsulate the additives of claim 10 because Jahns teaches emulsified polymerization of monomers including solvents, monomers, and initiators inherently form microencapsulated capsules containing a core and shell used in applications where when elevated temperature is applied the microcapsules are opened to control the release of the protected core material (Abstract and col. 6, line 65-col. 7, lines 10 of Jahns).

25. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,094,273 to Asher et al. in view of USPN 5,596,051 to Jahns et al.

Asher teaches a crystalline colloidal arrays (CCA) made of PC (col. 7, lines 2-11) comprising styrene particles dispersed in a hydrogel matrix (continuous phase as described in Applicant's specification), a quantity of solvent (surfactant such as sodium-di(1,3-dimethylbutyl)sulfosuccinate or water), emulsifier in the form of micelles (emulsion polymer electrically charged monodisperse particles) and a quantity of polymerization initiator (crosslinking agent, free-radical initiator to initiate polymerization or UV photoinitiator) dispersed in the solvent, and the thermally coalescable material comprising a monomer (mixing the desired monomer with a crosslinking agent) dispersed in the solvent (such compositions are commercially available) to create a film (col. 8, lines 15-45, col. 9, lines 20-33) and applies a laser beam to write a pattern in the CCA (embraces a plurality of areas) to create a mutli-colored

display including computer display devices (col. 11, lines 18-45). See also col. 3, lines 25-50, col. 8, lines 20-68, and Figure 2.

While Asher does not expressly describe such composition is a core shell type comprising colors, the same ingredients are used and are commercially available.

Further, Jahns teaches the same ingredients of Asher and Applicant forms a core shell type particle in a microcapsule. The core and shell may contain inks, pigments, or colorants (Abstract, col. 1, lines 1-15, col. 4, lines 20-25, and col. 6, line 65-col. 7, lines 10 of Jahns).

It would have been obvious to one having ordinary skill in the art to have modified the layer of polymeric particles of Asher to include a first or second color because Asher teaches a multi-colored layer using the emulsion ingredients in polymeric particles and Jahns teaches colorants, inks and pigments are suitable additives for similar ingredients of core shell microcapsules used in applications where when elevated temperature is applied the microcapsules are opened to control the release of the protected core material (Abstract, col. 1, lines 1-15, col. 4, lines 20-25, and col. 6, line 65-col. 7, lines 10 of Jahns).

26. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,094,273 to Asher et al. in view of USPN 5,596,051 to Jahns et al.

Asher teaches a crystalline colloidal arrays (CCA) made of PC (col. 7, lines 2-11) comprising styrene particles dispersed in a hydrogel matrix (continuous phase as described in Applicant's specification), a quantity of solvent (surfactant such as sodium-di(1,3-dimethylbutyl)sulfosuccinate or water), emulsifier in the form of micelles (emulsion polymer electrically charged monodisperse particles) and a quantity of polymerization initiator

(crosslinking agent, free-radical initiator to initiate polymerization or UV photoinitiator) dispersed in the solvent, and the thermally coalescable material comprising a monomer (mixing the desired monomer with a crosslinking agent) dispersed in the solvent (such compositions are commercially available) to create a film (col. 8, lines 15-45, col. 9, lines 20-33) and applies a laser beam to write a pattern in the CCA (embraces a plurality of areas) to create a mutli-colored display including computer display devices (col. 11, lines 18-45). See also col. 3, lines 25-50, col. 8, lines 20-68, and Figure 2.

While Asher does not expressly describe such composition is a core shell type comprising colors, the same ingredients are used and are commercially available.

Further, Jahns teaches the same ingredients of Asher and Applicant forms a core shell type particle in a microcapsule. The core and shell may contain inks, pigments, or colorants (Abstract, col. 1, lines 1-15, col. 4, lines 20-25, and col. 6, line 65-col. 7, lines 10 of Jahns). It would have been obvious to one having ordinary skill in the art to have modified the layer of polymeric particles of Asher to include a first or second color because Asher teaches a multi-colored layer using the emulsion ingredients in polymeric particles and Jahns teaches colorants, inks and pigments are suitable additives for similar ingredients of core shell microcapsules used in applications where when elevated temperature is applied the microcapsules are opened to control the release of the protected core material (Abstract, col. 1, lines 1-15, col. 4, lines 20-25, and col. 6, line 65-col. 7, lines 10 of Jahns).

Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,094,273 to Asher et al. in view of USPN 5,596,051 to Jahns et al. and further in view of USPN 6,652,983 to Mori.

Asher and Janhs are relied upon above for claim 16.

Regarding claims 17 and 18, the combination does not teach a layer of polymer particles between a first and second thermoplastic sheet and where a heat reflecting second layer is on the first thermoplastic sheet.

As aforementioned, Asher teaches the polymeric layer that contains polymeric particles of polycarbonate among other ingredients in a film and used for optical articles or adhered to a metal indium substrate layer.

Mori teaches an in mold decorative sheet comprising a patterned base of polycarbonate (52, FIG. 16 and associated text) between thermoplastic layers (64, 54, FIG. 16 and associated text), and metallic indium sheet (53, FIG. 16 and associated text) supported on first thermoplastic (54, FIG. 16 and associated text). 64 is of PMMA or acrylic. 53 is of a metal thin film that may further be surrounded on either side of thermoplastic films including vinyl resin, acrylic resin, or urethane. 54 is of acrylic, polystyrene, or EVA (also meeting thermoplastic first sheet). See also col. 29-col. 31, line 40.

It would have been obvious to have modified the combination of Asher and Jahns to include a first and second thermoplastic sheet and heat reflecting layer on the first thermoplastic sheet because Mori teaches the construction provides high wear resistance used in mold decorative sheets (Abstract, FIG. 16 and associated text, and col. 29-col. 30, line 40 of Mori).

PRIOR ART OF INTEREST

USPN 4,256,805 to Tugukuni teaches a core shell polymer having one color in the core and a second color in the shell (col. 9, lines 35-50).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamra L. Dicus whose telephone number is 571-272-1519. The examiner can normally be reached on Monday-Friday, 7:00-4:30 p.m., alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tamra L. Dicus
Examiner
Art Unit 1774

September 14, 2005

RENA DYE
SUPERVISORY PATENT EXAMINER
A.U. 1774 9/19/05